

manuscript the relevant formulae were given in an Appendix but were deleted according to the referees' requirements.) We are willing to concede that we may have shown some lack of precision in describing the clinical interpretation of the parameters VI, VFI and flow index (FI), whose names, we agree, are in some way misleading.

We completely agree with the fact that our conclusions should be interpreted with caution, and this is also stressed in our paper. With the same objectivity, we would like to remark that a love for accurate phrasing should never conflict with common sense. Blood, being a particulate fluid, obviously contains scatterers.

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Re: Pain experienced during transvaginal ultrasound, saline contrast sonohysterography, hysteroscopy and office sampling: a comparative study

We read with interest the article by Van den Bosch *et al.*¹ on pain experienced during transvaginal ultrasound, saline contrast sonohysterography (SCSH), hysteroscopy and office sampling of endometrium. The authors reported on a series of just over 400 patients with abnormal bleeding, of whom 39% were postmenopausal. They found transvaginal ultrasound to be the least painful test followed by SCSH, diagnostic hysteroscopy and office sampling. Based on these findings they concluded that the patients would prefer SCSH over hysteroscopy as an initial diagnostic approach. We would like to make several comments on the article.

Firstly, and most importantly, the conclusion that patients would prefer one test over the other based on the result of pain scores alone is in our opinion incorrect. The preference of a patient for a particular test or diagnostic strategy should also depend on the diagnostic accuracy of the test, its costs, failure rates and side-effects. With respect to diagnostic accuracy, the authors refer in a non-systematic way to five previous studies, on the basis of which they conclude that the accuracy

of each of the four tests is comparable. Unfortunately, the authors do not report exact diagnostic accuracy measures, whereas they do distinguish premenopausal and postmenopausal women. For example, for the detection of endometrial carcinoma, endometrial biopsy has a sensitivity of 99.6%², transvaginal ultrasound has a sensitivity of 96%³ and hysteroscopy a sensitivity of 86.4%⁴; thus endometrial biopsy is probably a better test than hysteroscopy or transvaginal ultrasound to exclude endometrial carcinoma. Furthermore, it might be possible that patients are willing to accept more pain in exchange for certain other advantages of the investigation (e.g. diagnosis and treatment in one session). Therefore it could be possible that patients would prefer hysteroscopy over SCSH, since hysteroscopy offers the possibility of diagnosis and treatment in one session. With respect to costs, they refer only to a specialist's fee in Belgium and do not take into account patient- and insurance-related costs.

The second concern is that all tests were performed in a particular order, first transvaginal ultrasound, then SCSH followed by hysteroscopy and endometrial sampling. It may be a coincidence, but this is exactly the order in which the patients graded the procedures from least to most painful. The explanation provided by the authors states that this was the order that was used in the practice, which may be acceptable from a practical point of view but not from a scientific one. Finally, in the analysis of the data the authors chose multiple statistical tests for multiple comparisons rather than making one comparison per dimension. With respect to the comparison with dental care no specifications are given on how this dental care was performed. Was the dental care, for example, inspection, was it treatment for caries, and, if so, was local anesthesia applied?

Therefore, the authors' conclusion that 'patients would prefer SCSH over hysteroscopy as an initial diagnostic approach' is preliminary. A randomized controlled trial of different diagnostic strategies and a structured assessment of patients' preferences would be necessary to fully answer the question as to which initial diagnostic approach to use in cases of abnormal uterine bleeding.

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Reply

We appreciate the valuable comments by Timmermans *et al.* In our series the pain experienced during saline contrast sonohysterography (SCSH) was less than that during hysteroscopy or endometrial sampling¹. We suggest taking pain experienced into account when defining diagnostic strategies, i.e. if at any point in a diagnostic tree two tests have a similar diagnostic value, it may be logical to choose the test that causes the least pain to the patient.

Although beyond the scope of our article, the comments of Timmermans *et al.* nicely illustrate that, besides the commonly quoted diagnostic accuracy, cost and procedure-related failure rates, the choice of a diagnostic strategy largely depends on the clinical setting (including the availability of ultrasound and/or office (operative) hysteroscopy, local referral policies, patients' population characteristics and clinicians' experience with the diagnostic procedures). Endometrial sampling may for instance be suitable as an initial diagnostic procedure in an extremely obese, hypertensive, postmenopausal patient in a setting without ultrasound facilities, if only malignancy is to be excluded. At the other end of the spectrum, if operative office hysteroscopy is available, diagnosis and treatment may be offered in a 'one-stop clinic' setting. In that case, a triage system (e.g. SCSH) might be considered in order to optimize time for the experienced operative hysteroscopist. That, in Belgium, the €27 specialist's fee for hysteroscopy is entirely reimbursed by the medical health system may be surprising to some, and illustrates the fact that the integration of costs in diagnostic algorithms may lead to different diagnostic strategies from one country to

another. The patient's choice will thus largely depend on the information she receives. This information should rely on evidence-based data², but in practice it also depends on the clinician's experience and on the setting in which she or he works.

We acknowledged in our paper that carrying out the tests in a particular order might have affected the results. In a randomized crossover study in patients on tamoxifen, comparing SCSH and office hysteroscopy, Timmerman *et al.*³ also showed that more patients preferred SCSH to hysteroscopy ($P < 0.001$). In the present study the patients were asked to compare the pain experienced during the different tests with the pain at dental care. Because we looked at inpatient pain experience using paired tests, the type of dental care was of little importance.

Although a universally accepted strategy in the diagnosis of uterine pathology may remain a utopia, we believe that the pain experienced by patients is one of the variables that should be integrated into the design of further diagnostic algorithms.

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